

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of flowing fluid in a non-sipper microfluidic device, ~~the method comprising: flowing fluid through the non-sipper microfluidic device to emulate a fluid flow profile in a microfluidic device comprising an external capillary,~~
the method comprising:

flowing a sample from a first internal source into a non-sipper main channel via a capillary emulator channel, wherein the non-sipper capillary emulator channel simulates the external capillary;

flowing the sample through the non-sipper main channel; and

flowing one or more reagents from a second internal source into the non-sipper main channel via a non-sipper side channel.

~~wherein the fluid flow profile results from flowing one or more sample from an external source into a microfluidic device.~~

2. (original) The method of claim 1, wherein the non-sipper microfluidic device comprises a planar microfluidic device.

3. (original) The method of claim 1, wherein the external source comprises a microwell plate.

4. (currently amended) The method of claim 1, wherein flowing fluid through the non-sipper microfluidic device comprises creating one or more sample plug and one or more buffer plug in the non-sipper microfluidic device, which one or more sample plug and one or more buffer plug emulate fluid flow from ~~the~~ an external source into the microfluidic device via the external capillary.

5. (original) The method of claim 4, wherein creating the one or more sample plug and the one or more buffer plug comprises:

- (i) loading a sample from a first source into a channel of the non-sipper microfluidic device,
- (ii) loading a buffer from a second source into the channel;
- (iii) applying pressure to the sample in the channel, thereby creating the one or more sample plug and transporting the one or more sample plug through the channel; and,
- (iv) applying pressure to the buffer in the channel, thereby creating the one or more buffer plug and transporting the one or more buffer plug through the channel.

6. (currently amended) The method of claim 5, further comprising alternately performing step (i) and step (ii).

7. (currently amended) The method of claim 5, further comprising repeating steps (i) and (ii).

8. (currently amended) The method of claim 5, further comprising continuously performing step (iii) and step (iv).

9. (currently amended) The method of claim 5, further comprising alternately performing step (i) and step (ii) while simultaneously performing step (iii) and step (iv).

10. (currently amended) The method of claim 5, wherein step (iii) and step (iv) ~~comprising~~ further comprise simultaneously applying a first pressure to the sample and a second pressure to the buffer, wherein the first pressure and the second pressure are different.

11. (original) The method of claim 5, wherein the first source and the second source comprise internal reservoirs.

12. (currently amended) The method of claim 5, further comprising loading the sample from the first source into the channel of the non-sipper microfluidic device by applying a first electrokinetic gradient between the first source and a waste reservoir and loading the buffer from the second source into the channel by applying a second electrokinetic gradient between the second source and the waste reservoir.

13. (original) The method of claim 12, wherein the waste reservoir comprises an internal reservoir.

14. (currently amended) The method of claim 12, further comprising alternately applying the first electrokinetic gradient and the second electrokinetic gradient.

15. (currently amended) The method of claim 14, further comprising alternately applying the first electrokinetic gradient and the second electrokinetic gradient and simultaneously applying pressure to the sample in the channel and to the buffer in the channel.

16. (currently amended) The method of claim 5, further comprising loading the sample from the first source into the channel by applying pressure to the sample and loading the buffer from the second source into the channel by applying pressure to the buffer.

17. (currently amended) The method of claim 16, further comprising alternately applying pressure to the sample and to the buffer.

18. (currently amended) The method of claim 17, further comprising alternately applying pressure to the sample in the first source and to the buffer in the second source and concurrently applying pressure to the sample in the channel and to the buffer in the channel.

19–20. (canceled)

21. (currently amended) The method of claim ~~19~~1, wherein the non-sipper main channel simulates a ~~sipper~~-main channel in the microfluidic device comprising the external capillary.

22. (currently amended) The method of claim ~~19~~1, wherein the non-sipper side channel simulates a ~~sipper~~-side channel in the microfluidic device comprising the external capillary.

23. (currently amended) The method of claim ~~20~~1, claim 21, or claim 22, wherein simulates comprises having substantially the same hydrodynamic resistance as an equivalent channel in the microfluidic device comprising the external capillary.

24. (currently amended) The method of claim ~~20~~1, claim 21, or claim 22, wherein simulates comprises having substantially the same length, width, and depth as an equivalent channel in the microfluidic device comprising the external capillary.

25. (currently amended) The method of claim ~~20~~1, claim 21, or claim 22, wherein simulates comprises flowing substantially the same amount of the one or more reagent or the sample as an equivalent channel in the microfluidic device comprising the external capillary.

26–40 (canceled)